

CHAPTER 9

STRATEGIC METHODS

The discussion of strategic ideas in the previous chapter leads on to consideration of the methods by which those ideas can be put into practice. Each stage of the forest strategy process, which was presented in outline, needs to be elaborated to describe what should be done. Various methods are available for use during the three phases of the process, which are suitable for the particular tasks specified by the twelve stages in the sequence shown in Table 8.2. Some of these methods are in use in the forest sector, though not necessarily so generally or as commonly as they should be; others deserve to be introduced, with or without modification, to tackle the issues on which the strategy process focusses attention. These methods have been applied in other fields, particularly in the business world and also for public administration. They make use of techniques, such as cost-benefit analysis, which have been developed in different disciplines. Forest strategy needs an appropriate armoury of methodological weapons if it is to succeed in avoiding the policy failures of the past. Part of that armoury is already available and part awaits development.

Attention is focussed particularly on the problems of choice that arise during strategy formulation and programme development. The analytical phase prepares for choice of strategy, by collecting and presenting the information on which alternative scenarios are based, the aims phase is concerned with choice of strategic objectives and selection of an appropriate programme to put them into effect, and the action phase deals with the consequential series of tactical and operational choices involved in programme development. All these choices are interconnected, with feedback and reconsideration as required, through the subsidiary cycles of the strategy procedure. The principle that governs strategic choice is the pursuit of improvements in the welfare of the community, i.e. social betterment, but the way in which this general aim should be interpreted in relation to the forest sector is a major obstacle. Innovative solutions are necessary.

Some of the problems arise because of uncertainty about the outcomes of the choices that are made and some are caused by appraisal difficulties. Alternatives are assessed by comparing their relative desirabilities, as judged from their probable consequences. If the expectations prove wrong, for any reason, the choices may also turn out to be faulty. Special attention must therefore be given to ways of

countering the effects of uncertainty. Lower output expectations may be traded off against increased reliability of future output flows.

This chapter is divided into three sections, corresponding to the three phases of the strategy cycle. The first section covers the manner and content of sector reviews, modelling in so far as this is feasible and SWOT analysis; it also includes the sector's participative and institutional aspects. The second section deals with imperatives and scenario preparation, leading to examination of the techniques for selecting a strategy and preparing a NFP. Programme development, monitoring and evaluation methods are discussed in the third section.

9.1 ANALYSIS

Facts underpin successful strategies. All the information about the forest sector that is relevant to strategy formulation and decision making should be collected during the analytical phase of the strategy process. A large amount of data about all aspects of the sector needs to be assembled and refined. This phase provides the basis for making informed choices during the later phases. It leads to a grand design for the sector and is the starting point for deciding which route its development should follow. It also provides the reference point from which to measure future progress.

Choice of strategy requires a full assessment of the present state of the forest sector and what is expected to happen to it under various assumptions. The four stages of the analytical phase serve this purpose. Evidence is collected at the *sector review* stage, which enables its existing condition to be described; it also indicates how the sector is likely to change over time in the absence of deliberate interventions. What exists and what is expected to happen if the present activities and pattern of resource allocation continue without alteration constitute a baseline with which alternative future states can be compared. The *modelling* stage provides projections of future outputs and changes in the balance between supply and demand; these projections enable a range of scenarios to be prepared. The sector's position relative to other sectors and its standing in relation to external events is revealed by *SWOT analysis*, which provides valuable pointers to the future; this stage influences the scenarios, strategy formulation and NFP preparation. Similarly, the present arrangements for *participation* in sectoral affairs set the scene for future changes in the sector's institutional framework.

Sector Review

The sequence used to describe the forest sector in Part I provides a convenient systematic approach when reviewing the sector. The first five steps in the review process aim to establish the facts, the remainder are more concerned with their analysis and interpretation. The series consists of the following:-

- (i) resources assessment, covering the sector's natural, capital and human resources,
- (ii) analysis of activities by subsectors,

- (iii) identification and, where possible, measurement of output flows of all kinds,
- (iv) description of sector organizations, their activities, roles, interests and influence,
- (v) examination of the institutional framework by functions.
- (vi) input-output analysis and interactions with other sectors,
- (vii) sector capacity assessment and identification of shortfalls,
- (viii) characteristics of regions/provinces/districts in relation to strategy,
- (ix) review of external interactions, including trade, investment and aid,
- (x) contribution to gross domestic product and national income.

Resources assessment covers the sector's endowment of natural, capital and human resources, their allocation for different purposes and the provision made for resource renewal, as described in Chap. 3. As far as the available records permit, the assessment should be quantitative, supported by tables and backed by maps to show their distribution and accessibility. The most recent statistics should be used to describe the present situation and construct a baseline against which future changes can be measured; figures from earlier years may reveal significant historical trends which provide useful pointers to the future. The main sources of information are likely to be government departments and large organizations in the private sector, but the review should try to locate any relevant data, wherever it is stored. The reliability of the records and any serious inadequacies should be noted for future remedy. The person(s) carrying out the review need to be familiar with what is available and where it can be found.

Forests are important components of the sector's natural resources. Detailed examination is required of the range of forest ecosystems on land designated as forest, and of the trees and woody vegetation found elsewhere, on land which is not classed as forest. Forests are usually characterized as accessible or inaccessible, and divided into two categories according to their use for production or protective purposes. However, further breakdown by ecosystem, ownership, form of management and type of output is essential. Estimates of growing stock, species composition, density, age class distribution and growth rates are required for forests and trees being grown for timber; areas set aside for other purposes, such as water supply, wildlife or amenity, require other data sets to adequately describe their significance and potential. These range from streamflow measurements and seasonal variations in catchment areas, to species lists and populations in nature reserves, and visitor numbers and facilities in national parks. The precise nature of the information that is necessary varies according to circumstances, but the object of collecting it is to provide a foundation for decisions about future use and development of the available resources.

Capital resources consist of the physical capital, made up of buildings, machinery, vehicles and equipment, that is in use in the forest sector. The value of these assets is a measure of the investment that has taken place and the capital employed. Estimates of the capital resources available to the forest sector are difficult to assemble. National statistics may be helpful, although they seldom cover all aspects of sectoral activity. Surveys of industrial capacity may be undertaken from time

to time, but the capital employed in forest management activities is problematic. Asset registers, which record the details and quantities held, are usually maintained by large organizations, but small enterprises are less likely to keep reliable records. Company accounts normally show the value of their capital assets either at cost or after providing for depreciation; government agencies, such as forest departments, may not keep reliable records of the value of their assets. It is also possible for estimates of capital obtained from these sources to be misleading because organizations rely on hiring plant, vehicles and equipment from suppliers outside the sector. For strategic purposes, while it is important to investigate the sector's capital resources, accurate estimates assets may be less important than assessing the capacity of its member organizations to undertake programmes of capital works.

Human resources are also difficult to estimate. Employment statistics published by governments are unlikely to separate numbers in the forest sector from other industries and may not include all categories of workers; part-time employees or workers in small enterprises are sometimes left out. As with capital, a direct approach to organizations may be the easiest way to find out about the numbers, types and skills of those employed in the sector. The assessment should also take account of the employment potential available (seasonal or full-time) amongst farmers in areas adjacent to forests and tribal forest dwellers in some developing countries. It is important to identify capacity bottlenecks which might hinder future development of the sector. Other aspects of the human resources situation include educational standards, levels of skills and training facilities.

The pattern of resource allocation can be discerned through budgets and accounts. Investment is normally separated from recurrent or operational expenditure and payrolls are distinguished from purchases of goods and services. It is less easy to break down total spending according to types of output or to identify the marginal expenditure required to increase the flow of particular outputs, although this information is relevant to strategy formulation. Changes in strategy lead to redistribution of the available resources and both the extent and the speed with which resources can be reallocated are features which require attention. The resources review should indicate any misuse of resources or inefficiency in the way they are combined. It is important to make the best use of existing resources by reallocation before seeking funds to purchase additional resources.

Resource renewal should be addressed during the review to find out if stocks are being depleted or capacity diminished. It is important to avoid running down the existing stock of assets and consequent loss of productive capacity; sustainability depends on maintaining the size and quality of the resource base. Forest resources become depleted if the rate of output removal exceeds the replacement rate, for example, by felling more than the annual increment of timber or excessive hunting of game animals. Capital resources are kept up by ensuring that there is adequate provision for maintenance and depreciation to enable buildings, machines and equipment to be replaced at the end of their useful life. The productivity of human resources depends on educational standards and appropriate training to maintain and enhance the level of skills among the workforce. The review should identify

shortcomings in the renewal provisions which need to be remedied by the strategy and the NFP.

Activities analysis covers the range of activities undertaken in the sector. It can be undertaken conveniently by subsectors, following the classification described in Chap. 4. The various activities in each subsector should be described to build up a complete picture of what goes on in the sector as a whole.

It is desirable, if data can be obtained, to show the value added attributable to subsector activities. Additionally, the adjustments necessary to account for growing stock changes in the forest management subsector should be calculated and some indication given of the carbon sequestration effects of present management practices. It may be possible to indicate where there is scope for improvement.

Estimates of employment and capital formation should also be shown by subsectors. The significance of trade activities, such as subsector contributions to exports or dependence on imports of raw materials should be explained.

Output assessment consists of identifying and quantifying, as far as possible, the various types of output attributable to the forest sector, which were described in Chap. 5. They include those which are tradeable commodities, such as timber and non-wood products, and also other outputs which provide services to the community, such as water supply, environmental protection and amenity. The full range of benefits should be described, including intangible benefits such as option values.

Organizations, interest groups and stakeholders should be reviewed by subsectors. They can be classified according to ownership, primary purpose, type of activity and main beneficiaries as shown in Tables 6.1 to 6.4 in Chap. 6. The functions of government ministries and departments need to be stated; in particular, the role of the forest department or forest service should be spelled out. There may be divided responsibilities, overlaps or gaps between ministries and departments, in relation to environmental matters, industry and trade for example. Forest owned by the state is usually managed by a government agency, private landowners either look after their own holdings or employ specialist companies to manage them; fragmentation has organizational implications in relation to sustainability. Private businesses tend to be concentrated in the harvesting, manufacturing and distribution subsectors; their scale and type of activity may have strategic implications. Attention should also be paid to the growth of service enterprises, NGOs and cooperatives which may offer opportunities for greater participation in sector affairs.

The **institutional framework** of the sector binds the sector together and helps to make it a recognizable entity. It is best described by reference to the five groups of functions which have been described in Chap. 6. The existing institutional arrangements in each group should be reviewed and their adequacy assessed. Their performance has an important bearing on strategic possibilities and attention should be paid to shortcomings which will need to be addressed when the NFP is prepared. Institutional change is a vital ingredient in sector development. Sensitive interactions and relationships between organizations are involved. If these are not fully understood from the outset, attempts to induce changes can easily lead to difficulties which may undermine future development. Arrangements for participation

in sectoral affairs, the resolution of conflicts and leadership issues need particular attention in this connection. It is also important to cover the institutional links between the forest sector and other sectors, which provide channels of communication with them and, in some situations, a way of protecting the forest sector from adverse external influences.

Input-output analysis is a well-known economic technique for exploring the intersectoral transactions that take place in an economy. It is usually presented in the form of a table, with the value of inputs on one axis and outputs on the other. In many countries such tables are prepared from time to time by the government statistical services. The method's usefulness for forest sector analysis is its ability to reveal the interactions taking place between subsectors and with other sectors such as agriculture. An input-output table for the sector shows its dependency on external suppliers of goods and services of all kinds, including raw materials, energy and fuel; in an outward direction, it shows the destinations to which forest products are sent. Input-output analysis has obvious limitations because it can only deal with inputs and outputs that are traded and have money value; it needs to be supplemented by an account of the intangible outputs emanating from the sector. The analysis is partial, nevertheless, it is useful for strategy formulation in countries where forest products are important economic commodities. Elsewhere, a simpler approach may be sufficient. This consists of describing the size, range and type of interactions with other sectors and the environmental or other kinds of benefit which they receive.

Sector capacity assessment is important because the resources that are available limit future development and influence the kind of strategy that should be adopted. Output flows cannot be increased unless resources are either redeployed or supplemented from elsewhere. It is necessary to identify where bottlenecks occur that would prevent outputs being increased, so that appropriate remedial action can be included in the NFP. The most likely limitations are the availability of suitable land for tree crops, an adequate communications network to enable more intensive management systems to be introduced and shortages of skilled staff and labour. An adequate information system is also essential to enable shortfalls to be identified and remedied.

Regional, provincial and local characteristics may have a significant influence on strategy preparation if particular parts of a country are so unlike the rest that they need to be treated in a different way. It may be necessary to have sub-strategies for particular areas under the umbrella of a national strategy for the whole country. One of the functions of the sector review is to identify and explain major differences of this sort, so that they are taken into account when aims are formulated. Such differences may be created by topography; e.g. mountainous regions may need a form of forest development which is centred on environmental protection, while lowlands where agriculture predominates concentrate on agroforestry. Other possible causes include large disparities in industrial development, climatic features and the need to cater for distinctive ethnic or social groups such as shifting cultivators.

External interactions cover relationships with other countries and the international community. It is necessary to review the sector's trade with other countries by providing tables of imports and exports, showing the quantity and value of the main types of product, and the balance of trade. National trade statistics are the main source. FAO statistics published in the yearbooks are based on data supplied by countries; the figures from past years enable trends to be identified and their causes explored. These statistics reveal the extent of the country's reliance on imports to meet its demand for forest products and its main markets for exports. There may be opportunities for import substitution and export promotion. The sector's effect on the balance of payments can be seen and steps taken to avoid unsustainable deficits in future.

The extent to which overseas investment and financial flows from abroad contribute to forest sector activities should be investigated. Inward investment may be a significant and necessary condition for sector development where domestic sources of finance are insufficient or cannot be mobilized. Investment in forest industries may come from overseas companies, sometimes from multinational corporations. Care is necessary with figures obtained from the latter, however, because of the possibility of transfer pricing between subsidiaries, which is designed to increase the book value of capital assets and lower profits for tax purposes. With the exception of some commercial investment in fast-growing plantations, private finance from abroad tends to be attracted to harvesting, processing and manufacturing, where pay back periods are generally shorter and profitability is seen to be higher. Most investments by overseas governments in the forest sector come in the form of aid for forestry purposes. The developing countries are the main recipients. Some of this is routed through international agencies and an increasing amount is being allocated to NGOs in the hope that it will have a direct impact on field operations and the incomes of local communities in poor countries. Much overseas aid comes in the form of technical assistance rather than loans or gifts of money.

Output and income contributions to the national economy are derived from forest sector activities. Sector organizations generate value added which forms part of the GDP, as described in Chap. 4. Estimates of the size of this contribution should be included in the review, if possible with corrections for any changes in the growing stock. National income contributions correspond with the total value added after adjustment for foreign transactions. These statistics can be derived from the national statistics which are produced annually by government statistical services. Historical data can be used to show whether the proportion of GDP attributable to the forest sector has increased or decreased.

Transformations and Modelling

The sector review provides data on which to base estimates of supply and demand. These are used to prepare the alternative sets of projections of future output flows on which decisions about strategic aims depend. It is necessary to match future supply possibilities to the expected levels of requirements for forest sector outputs.

Forecasting involves making assumptions about what may happen to the sector's resources, activities and outputs in the years to come and the likely responses of its organizations and institutions. They all interact and it is essential to treat the sector as a system. Therefore, the output projections should attempt to portray future system behaviour under clearly stated assumptions. This is a complex task. The methods available were outlined in Chap. 7. They include:-

- description and analysis of the *transformations* which take place in the sector,
- *gap analysis* to discover significant imbalances between the sector's capacity to provide outputs of all kinds and the requirements of consumers and society,
- *modelling*, using either simple conceptual models of parts of the system, or more complex representations which simulate system behaviour with the aid of a computer as with TIMPLAN and similar modelling system.

A comprehensive description of the forest sector as a system can be built up by analysing all the transformations that take place. Transformations can be listed and their characteristics summarized by means of a table (as in Table 7.1). A matrix showing the transformations according to the organizations that carry them out can also be prepared (as in Fig. 7.2). Each cell in the matrix portrays a particular input-output relationship and its interactions (see Fig. 7.3). Gap analysis and modelling depend on establishing the quantities involved in these transformations. For example, the conversion of logs into sawn timber can be expressed as the number of units of roundwood required to produce one unit of sawn timber. Gap analysis needs this conversion factor to compare the projections of roundwood supplied from the forest with the equivalent volume of sawn timber required to meet consumer's needs. Models such as TIMPLAN employ these conversion factors and also use data about the other resource inputs in the transformation process (e.g. labour and capital used to produce one unit of output). TIMPLAN also makes use of information about any utilizable by-products, such as offcuts, to enable a composite assessment of resource use to be built up. Transformation analysis is therefore the first step towards preparing projections of future supply and demand.

Gap analysis is based on estimates of future supply and demand which can be compared to discover shortfalls or excesses. A long term perspective is used, which disregards short-term market fluctuations in prices; it is customary to assume that real prices will remain the same and to ignore the effects of inflation on costs and returns. Supply projections depend on the quantities that can be harvested, collected or produced from the forest resources and demand projections are based on the amounts that consumers are expected to require in future years at constant prices. The supply of processed products is also affected by the capacity of the mills or factories to carry out the transformation processes, although this is generally overlooked in gap analysis.

Outputs of wood products, for example, depend firstly, on the quantity of standing timber which has reached a size fit for felling and secondly, on the industrial capacity to harvest, convert, manufacture and distribute the resulting products. Gap analysis concentrates on the former and involves the preparation of projections of future yields using data about the growing stock, its rate of growth and its age

class distribution, which change year by year. A growth model of some description is required¹. Some sort of model of consumer preferences and demand is also necessary. Typically, it is assumed that requirements are a function of the number of consumers and their incomes; demand increases as the population grows and becomes wealthier. Comparison of the two sets of projections reveals whether shortfalls or surpluses are expected and indicate where remedial action (such as afforestation) is required to close the gap. A modelling system like TIMPLAN can generate sets of projections rapidly and also enable the effects of altering the assumptions on which they are based to be tested. Modelling facilitates sensitivity analysis.

A similar procedure can be used to reveal shortfalls for other types of output, although not all are easy to predict or easily quantifiable. The supply of tangible outputs, such as game meat, mushrooms and fruits is largely dependent on the extent and condition of the forest ecosystems from which they come; the requirements for these outputs can be ascertained from estimates of the amount consumed by local populations plus the quantities being marketed commercially. Changes can be anticipated on the supply side if, for any reason, alterations are expected in the area or productive capacity of the forest; changes on the demand side may arise if consumers' lifestyles change or new markets open up. In many countries forests play a vital role in water supply and projections of supply and demand for water are necessary, based on the permeability of the catchments and their storage capacity on the supply side, and the needs of the community on the demand side. Projections of service outputs such as carbon sequestration and biodiversity are more problematic. The supply of both depends on the composition and state of the forest, but society's future expectations are very difficult to pin down, although the consequences of climate change and threats to important species are dramatically altering public perceptions of their importance.

Difficult though it may be to assemble projections for some types of output, the task should be attempted even if the results are rudimentary. A strategy, which ignores or overlooks some outputs, cannot be described as comprehensive and may also be regarded as both unsustainable and inequitable. Actual or possible imbalances, between the sector's productive capacity and society's requirements for forest sector outputs of all kinds, need to be identified before developing a strategy that aims to close the foreseeable gaps in future. The extent to which this aim can be achieved will determine the forest sector's contribution to future public welfare.

SWOT Analysis

Analysis of the **S**trengths, **W**eaknesses, **O**pportunities and **T**hreats that face an organization is a widely used tool of business management². SWOT analysis, as it is commonly called (See Box 9.1), is used to determine a firm's strategic position in relation to the changes taking place in the business environment³. It provides a mechanism for systematically thinking through the extent to which an organization can cope with outside events⁴. It is applicable to companies operating within the forest

Box 9.1 SWOT analysis in business organizations

“SWOT analysis provides convenient headings under which to study an organization and may provide a basis for decision-making and problem-solving.

- **Strengths** are those positive aspects or distinct attributes or competencies which provide a significant market advantage or upon which the organisation can build, for example through the pursuit of diversification. These are characteristics of the organisation such as present market position, size, structure, managerial expertise, physical or financial resources, staffing, image or reputation. By searching out the opportunities which match its strengths the organization can optimise the effects of synergy.
- **Weaknesses** are those negative aspects or deficiencies in the present competencies or resources of the organisation, or its image or reputation, which limit its effectiveness and which need to be corrected or need action taken to minimize their effect. Examples of weaknesses could be operating within a particular narrow market, limited accommodation or outdated equipment, a high proportion of fixed costs, a bureaucratic structure, a high level of customer complaints or a shortage of key managerial staff.
- **Opportunities** are favourable conditions and usually arise from the nature of changes in the external environment. The organisation needs to be sensitive to the problems of business strategy and responsive to changes in, e.g. new markets, technology advances, improved economic factors, or failure of competitors. Opportunities provide the potential for the organisation to offer new, or to develop existing, products, facilities or services.
- **Threats** are the converse of opportunities and refer to unfavourable situations which arise from external developments likely to endanger the operations and effectiveness of the organisation. Examples could include changes in legislation, the introduction of a radically new product by competitors, political or economic unrest, changing social conditions and the actions of pressure groups. Organisations need to be responsive to changes that have already occurred and to plan for anticipated significant changes in the environment and to be prepared to meet them.”

Source: Mullins (1996), pages 308–9.

sector. The method is equally useful for forest strategy, although some modification is necessary to cope with the situation in a conglomerate, composed of many diverse organizations, instead of a single enterprise.

The main differences between applying the SWOT concept to the forest sector instead of a company are due to their divergent aims and motivation. A firm's perception of its strengths and weaknesses is based mainly on its market advantages or disadvantages; threats and opportunities are seen in relation to the comparative abilities of its competitors. Strengths and weaknesses from the sectoral point of view

are judged by the significance of the sector's contribution to the national economy and welfare, and the extent to which society's requirements and aspirations can be satisfied; opportunities and threats come from its interactions with other sectors, government policies and patterns of resource allocation, international pressures and the dangers of disasters, such as fires and storms.

Table 9.1 SWOT analysis of the forest sector in Cyprus

| Strengths | Weaknesses |
|--|---|
| <ol style="list-style-type: none"> 1. Cyprus has a <i>long forestry tradition</i> and the Forestry Department is one of the oldest government departments. 2. The Forest Policy has been in force since 1950 and <i>multiple use</i> is a well established principle, based on the policy. 3. There is a <i>pro-forestry attitude</i> among Cyprus people, the civil service and Parliament. 4. The beauty of the mountain scenery, local climate, wildlife, biological diversity, picturesque villages and facilities provided for visitors encourage <i>tourism and recreational use of the forests</i>. 5. Cyprus has an <i>exceptional natural environment</i>, due to its island position and the effects of separation from other countries on the flora and fauna. 6. The Forest Department possesses <i>technical know-how</i> in relation to forest management, afforestation and restoration of degraded land. 7. There is a well organised and effective <i>system of fire protection</i> covering the State forests and adjacent areas. | <ol style="list-style-type: none"> 1. <i>Low forest productivity</i> for timber and biomass due to adverse climatic conditions for tree growth. 2. <i>Natural regeneration</i> is a <i>slow and difficult</i> process, due to variable and unreliable rainfall. 3. A considerable part of the productive <i>pine forest</i> is <i>understocked and deteriorating</i>; up to 50% of area needs to be excluded from felling for 30–40 years. 4. The present policy and system of management, mainly concerned with lumber supply, is <i>out of step with public concern about environmental quality and the loss of competitive advantage</i> for domestic wood processing in relation to imported products, caused by the trend towards greater trade liberalisation. 5. <i>Slow progress in increasing the forest area</i> although private and State land suitable for afforestation is neglected, abandoned and becoming degraded. 6. <i>Wildfires</i> are destroying private forest and adversely affecting the countryside. 7. Slow progress in designating areas as <i>National Parks and Nature Reserves</i> and protecting features of special scientific, historical and cultural interest. 8. Serious problems with <i>insufficiently regulated and unsustainable hunting practices</i>, which conflict with the needs of nature conservation, national parks and recreation management. 9. <i>Forest policy</i> in need of revision. 10. <i>Institutions which need reexamination and restructuring</i> to cope with changing conditions; in particular the Forest College continues to teach traditional technical subjects unsuited to new socio-economic trends and the provision of environmental services. |

(Continued)

Table 9.1 (Continued)

| Opportunities | Threats |
|---|--|
| <ol style="list-style-type: none"> 1. To <i>broaden the 'sustainability concept'</i> as applied to forest management in accordance with international obligations. 2. To <i>accelerate afforestation</i> of land that has been abandoned and is degrading with external assistance from the European Union, Global Environmental Fund and similar sources. 3. To extend the Forest Department <i>fire protection system</i> to non-State lands, possibly with external assistance from the European Union, by collaborating with other agencies to provide a national integrated system. 4. To protect and enhance <i>the quality of the environment</i> by conservation of sites which are important for heritage, scenery, wildlife and biodiversity. 5. To improve <i>general health and wellbeing</i> by providing opportunities for recreation and tourism. 6. To support <i>forest villages</i> and <i>village communities</i> more effectively. 7. To contribute more to <i>watershed protection, water storage and supplies</i>. 8. To use modern information technology to educate all sections of society about the role of forests in Cyprus and the benefits they confer. 9. To align forest strategy and development in Cyprus with the objectives of the European Union. | <ol style="list-style-type: none"> 1. <i>Inertia</i> in the Government prevents sensitive issues, such as the regulation of hunting and the release of land for afforestation, from being dealt with. 2. <i>Failure to redeploy domestic resources</i> of manpower and money to meet the needs of a new strategy. 3. <i>Supplementary assistance from abroad</i> may not be forthcoming. 4. <i>Organizational and institutional restructuring</i> fails to take place. 5. <i>Laws are not harmonized</i> to provide a comprehensive framework for dealing with environmental and conservation issues. 6. <i>Recreation and tourism is inadequately controlled or misdirected</i>, allowing visitors to destroy what they come to see, causing environmental deterioration leading to unsustainability. <i>Conservation and development need to be integrated</i> and related to carrying capacity through local plans. |

Source: *Strategy for Forest Sector Development in Cyprus*, pages 21–23.

SWOT analysis requires both an understanding of the environment and the capabilities of the sector. The sector's strengths and weaknesses are largely internal factors, whereas the opportunities and threats are more likely to come from outside⁵. Its strengths are what it is good at and its weaknesses are where it is at a disadvantage; opportunities are trends or circumstances that favour the sector, whereas threats are potentially dangerous to its resources or likely to obstruct its development. These four elements should be listed. The example in Table 9.1 shows the SWOT analysis carried out prior to scenario identification in Cyprus, as was previously described in Box 7.6.

Participation

Participation in sectoral affairs is an essential ingredient of strategy preparation. During the analytical phase of the cycle, the basis needs to be established from which to extend participation in the future. It is necessary to describe what arrangements exist for consultation with the various organizations and interest groups and the extent to which they are involved in joint action of any kind. An assessment is also required of the adequacy of these participative arrangements, including participants roles, procedures for their involvement, their community of interests, leadership functions and the direction and control of sectoral activities.

The starting point for this assessment is the list of organizations which was prepared during the sector review stage; this list provides information about the organizations, arranged by subsectors, describing their ownership, primary purpose, type of activity and main beneficiaries. Stakeholders need to be identified and their attributes of power, legitimacy and urgency assessed. The roles of the participants in sectoral development can then be compared with the formal or informal arrangements for meetings and consultation, in order to judge the extent to which their interests are adequately represented. The assessment should also take account of any general procedures for ascertaining public opinion, or for hearing the views of sections of the community on forestry matters. Channels of communication which are (or could be) used to explain policy and to educate the public about forest sector affairs should be explored. The extent to which there is a demonstrable sense of unity among participants and sectoral cohesion can be investigated.

A key question is where responsibility lies for conducting the forest strategy process. Who decides matters of forest policy? Which government ministry or department looks after forest resources? Is responsibility for the forest sector split between departments, with, say, forest industries forming part of the portfolio of a separate ministry for industry and trade? What other responsibilities are also covered by the ministry which handles forestry and do these reinforce or detract from the amount of attention that the forest sector receives? It is important to establish the power sharing arrangements within the public administration, in so far that they apply to the forest sector, and the means by which differences or disputes are resolved. There are sometimes committees or consultative arrangements, which have been set up to coordinate the work of departments or agencies, operating within a ministry or crossing ministerial boundaries. The final arbiter in all these matters must be the government, but it is necessary to identify the particular points in the administrative machinery where decisions are taken and power resides.

The form of government may influence the strategy process. Under a federal constitution power is shared between the centre and the states; forest strategy may be decided at either federal or state level. In some cases forest sector responsibilities are split between the federal and state governments, as in Pakistan and Malaysia where research is a national activity while forest management is done at state level. Unitary states are generally less complicated, although some responsibilities may be devolved to provincial or district level. Decentralized, local administration

is a feature in some countries, such as Nepal. Generally, forest strategy cannot be divorced from the structure and institutional realities of a country's system of government. Each country deals with forest sector affairs in its own way, hopefully in a manner that is suited to its needs.

Participatory arrangements vary greatly. Where a large proportion of the forest resources are owned by the state, their management is usually in the hands of a government department or forest service. These agencies are influential and tend to dominate debates about forest policy; sometimes they still behave dictatorially, although high-handed forms of administration are now outmoded. In countries with fragmented forest ownership by numerous individuals or groups, the role of government is more collaborative and tends to be focussed on maintaining management standards and the provision of services. A participatory approach is essential to secure cooperation and goodwill where agroforestry is being promoted. The extent to which participation by forest industries and users of forest products is encouraged or deliberately arranged is less clear, even though it concerns their future prosperity. Forest industries in corporate ownership are managed by their directors on behalf of shareholders; in some countries they are strong enough to influence governments directly, elsewhere, powerful trade associations negotiate with governments on behalf of their members. The role of NGOs in providing a voice for all those rural people, who have a stake in forest development but are otherwise unrepresented, is now recognised although not always listened to. Too often, participation by the beneficiaries of forest sector outputs is not well-organized. Generally, governments have tended to introduce participatory practices in response to particular pressures coming from interest groups or because policies based on direct action and legal sanctions have failed. Participation has yet to be widely adopted as the appropriate ideological approach, which is justified by the need for voluntary association in a conglomerate made up of independent organizations with a common interest. The participatory approach should be underpinned by a holistic view of the sector.

It is apparent that overall responsibility for supervising sectoral development and providing leadership should remain with the government. It is not appropriate to leave this duty to any of the individual organizations within the sector, which are concerned with the work of its parts rather than the complete picture. The common interest needs to be safeguarded. A broad view must be taken and the most appropriate place within the administrative system from which to see it needs to be identified. The most likely location is in the ministry responsible for forest resources. Often in practice, by design or default, the task of reviewing and analysing the forest sector for strategic purposes is passed to the agency responsible for managing state forests; other organizations usually lack the technical expertise required. The same department may also take charge of the administrative aspects of the subsequent phases in the strategy cycle, including procedures which provide for participation in the process. It may prepare scenarios, formulate strategy and draw up the NFP. It may also provide the direction, the drive and control required for the effective promotion of sectoral development. However, it is important to distinguish this

executive role from that of taking the key decisions about the strategy itself, which should not be delegated. As with all public policy issues, the government should have the last word.

9.2 AIMS

The second phase of the strategy process deals with the choice of suitable aims for forest sector development and selection of the means by which those aims can be converted into real changes in the sector. Its resources, activities and outputs, its organizations and institutional framework, are all subject to alteration as the result of the interventions prescribed in the NFP. These deliberate changes are designed to achieve the aims which have been selected. Consultation about the choice of aims is necessary and their endorsement by the government backs them with authority; support for the programme depends on participation by sectoral interest groups and public acceptance. The aims phase leads directly to the final phase in the 3A cycle, which is concerned with action to develop and implement the programme.

The aims phase contains five stages. First, it is necessary to identify and interpret the *imperatives* with which the strategy must comply. *Scenarios*, representing possible outcomes, can then be prepared, assessed and presented as a basis for consultation. The *strategy formulation* stage leads to choice of the course of action which is considered most advantageous for the community, having regard to the results of the consultation on scenarios. The fourth stage deals with the procedure for *NFP preparation*. Finally, the strategy and programme are endorsed and receive publicity by issuing a *forest policy* statement.

Imperatives

The first stage in choosing a strategy is to identify the imperatives which narrow down the range of options, as described in the previous chapter. Imperatives are general restrictions to which the chosen strategy is expected to conform. Four global imperatives were proposed, applicable to the forest sector in all countries: all strategies must be holistic, sustainable, equitable and participatory. It is possible that others might sometimes be added, relating to particular places or relevant only in certain circumstances. Such limited imperatives would need to be fully justified before they were accepted; it is important not to undermine the validity and persuasive power attached to restrictions of this type. Within the country covered by the strategy, all imperatives impose obligations on the government, organizations and individuals to comply with specified standards of acceptable management. They represent a special class of aims which must not be flouted. Their significance sets them apart from other strategic objectives and they deserve to be explicitly recognised throughout the strategy process.

A clear statement of the imperatives is necessary. Then they require interpretation to apply them to the particular situation covered by the strategy. Different circumstances need different interpretations. Furthermore, when they are applied,

judgements and compromises of various kinds are necessary, which are specific to those circumstances. It is relatively easy to list and describe the imperatives in a general way, but there can be no hard and fast rules governing their compliance. Imperatives set standards of behaviour against which to test the strategy and the NFP; how successfully the tests are met depends, to some extent, on the perceptions of the people making the judgement. The manner in which the imperatives are interpreted provides the explanations and guidance that are required.

The amplification that is necessary for each of the four global imperatives is described below:-

- **holistic** treatment of the forest sector depends on knowing where its boundaries should be drawn, what activities are to be included in the sector system and what outputs should be regarded as dependent on forest resources. A brief description of the sector is necessary, based on the review, which defines its boundaries for strategic purposes.
- **sustainability** depends on following the recipe given in the last section of Chap. 5. Three conditions need to be observed: *safeguarding* the resource base, *maintaining sector activities* and *preserving output choices*. All scenarios and possible strategies should be tested to make sure that they satisfy these conditions as far as possible. Actual and latent threats to resources, particularly forest land, should be identified. Sector activities which are in decline, or likely to be discontinued for whatever reason, should be pointed out. Factors which may affect the continuity of output flows need examination. Complying with the internationally recognised lists of criteria and indicators for sustainable forest management is not, by itself, a sufficient check on the sustainability of the sector. An essential ingredient is to obtain the best possible match between future output flows of all kinds and the requirements of society. The present generation is likely to have different preferences to the next. A perfect match is impossible in practice and it is neither possible nor desirable to maintain the flows of all outputs at their existing levels. Therefore sustainability at sector level represents a balance between competing demands; it should result in the compromise which yields the most satisfaction.
- **equity** is expected to give fair treatment to disadvantaged groups and not to discriminate against future generations. What is regarded as equitable is a matter of judgement in both cases. Strategies are judged by their consequences in relation to future income distribution. Therefore the expected impact on incomes and livelihoods of alternative courses of action need to be revealed when scenarios are prepared. Scenarios should also indicate which sections of the population are likely to gain from the various outputs and which groups stand to lose benefits as a result of the proposed interventions. Groups which need special protection, such as forest dwellers whose whole way of life may be destroyed, can be singled out for appropriate action in the NFP. Output reductions which will have an undue impact on particular industries, including loss of the incomes and employment they generate, can be identified so that compensatory measures can be put in place.

- **participation** and the arrangements necessary to ensure that it takes place were discussed in the previous section. The task here is to define a satisfactory level of participation in the strategy process and the NFP. The scenarios should reveal how it is proposed to extend existing participatory arrangements to bring them up to an acceptable standard and to foster communication and sectoral cohesion. Specific measures should be included in the NFP. It may be possible to anticipate sensitive issues, likely to give rise to disputes, which could upset a participatory approach.

It may be noted that, in practice, compliance with the requirements of imperatives depends largely on the NFP and what is included in its subprogrammes and projects. The programme should be consistent with the general intentions represented by the imperatives and its components should contain the particular measures necessary to meet the conditions that have been specified.

Scenarios

Scenarios identification and presentation is the next stage in the strategy process. Scenarios were briefly described in relation to modelling in Chap. 7. They are representations of the future state of the sector as a system, for which simulation modelling can provide much useful information. Where suitable models have been used in the past, or can be set up with the information collected during the review stage, they facilitate scenario preparation by supplying projections of future output based on a range of assumptions and indicating the likely consequences of alternative management regimes. Modelling enables the effects of modifications to be tested quickly and easily, so that scenarios can be created and developed progressively by a process of trial and improvement. Time and effort can be saved by using modelling systems such as TIMPLAN; they are a useful tool, although scenarios can be prepared without their aid.

The essential function of scenarios is their contribution to strategy formulation. Choice of strategy is based on consideration of alternative scenarios. Scenarios are analytical devices used to aid strategy preparation. They describe possible future forms of development and their logical consequences, so that it becomes possible to identify needs, clarify options, focus on priorities, formulate objectives and propose appropriate action. They represent imagined future states of the forest sector and provide alternative views of what the sector might look like.

The starting point for scenario preparation is description of the present condition of the sector⁶. From the existing situation, each scenario represents a different way forward or a fresh development path; scenarios describe alternative grand designs for the sector. One scenario should portray the results of not intervening. All need to be presented in a way that allows comparison of their relative merits, so that a rational selection can be made. Comparison of their advantages and disadvantages leads to identification of the strategy for future sectoral development that is judged to be most advantageous. In order to offer acceptable solutions, the scenarios

should comply with the imperatives and address the problems highlighted by the SWOT analysis.

On what basis should scenarios be selected? What kind of alternatives should be presented for comparison and assessment of their relative merits? There are several possibilities and it is probably unwise to be dogmatic about which method is preferable. It is sometimes suggested that scenarios should represent various levels of resource use⁷. This approach envisages a baseline scenario, which portrays the consequences of continuing to use existing resources in their present manner, and other scenarios representing the results from (say) low, medium and high levels of extra inputs. This has one serious difficulty; uncertainty about future resource availability is liable, in practice, to make the scenarios unattainable. Developing countries, in particular, which rely heavily on external sources of aid, require a more flexible approach. A preferable basis consists of distinguishing scenarios according to the way resources are used. This approach was used in Cyprus (see Box 7.6), where scenarios representing production, protection and recreational development were proposed. A variant of this is to use scenarios which focus on alternative output combinations, such as timber plus carbon sequestration or biodiversity plus water. Another possibility, which was suggested for Lithuania, a country in transition from communism to a market-based economic system, is to use scenarios based on institutional arrangements, according to where responsibility for forest sector affairs should be located and the extent of decentralization considered appropriate⁸.

Scenario preparation calls for an open mind and gifts of imagination. The *status quo* should be challenged deliberately by encouraging radical ideas and considering new ways of getting things done. Resistance to change is to be expected, but should not be allowed to suppress constructive thinking and lively discussion of the issues. Full participation by interest groups in the strategy process can do much to open up the debate. It follows that scenarios need to be clearly presented to a wide audience so that the subsequent discussion is based on facts and reasonable expectations rather than prejudiced assertions. This is facilitated by presenting the alternatives in a format that enables them to be easily compared.

Whichever method of scenario preparation is employed, the first scenario always portrays the consequences of carrying on as at present, with no alterations to current practices or the way resources are used. This 'no change' or 'nil' scenario maintains output flows at existing rates or, where past afforestation has led to a build up of immature growing stock, at a rate that increases as the younger age classes reach maturity. It also assumes that afforestation and other activities will continue as at present. This scenario provides the baseline for comparison with others.

The essential features of the scenarios can be presented in tabular form, as shown in Table 9.2. The Baseline Scenario sets the standard against which other scenarios are judged. The other scenarios, called Options, represent alternative grand designs or routes that sectoral development might follow. The number of options depends on circumstances, but more than five would be unwieldy. Each option should

Table 9.2 Comparison of scenarios

| Features | Scenarios (as many as required) | | |
|--|---------------------------------|----------|--------------|
| | Baseline | Option 1 | Option 2 etc |
| 1. General description of scenario | | | |
| 2. Principal outputs (amounts and supply deficits):- | | | |
| timber | | | |
| non-wood products | | | |
| biodiversity | | | |
| water supply | | | |
| soil conservation | | | |
| carbon sequestration | | | |
| etc. | | | |
| 3. Advantages and disadvantages | | | |
| benefits | | | |
| costs | | | |
| 4. SWOT analysis | | | |
| strengths | | | |
| weaknesses | | | |
| opportunities | | | |
| threats | | | |
| 5. Justification and risks | | | |
| 6. Sustainability | | | |
| safeguarding resource base | | | |
| maintaining sector activities | | | |
| preserving output choices | | | |
| trade dependency | | | |
| 7. Equity | | | |
| winners | | | |
| losers | | | |
| groups at risk | | | |
| 8. Participation | | | |
| leadership and direction | | | |
| main actors | | | |
| 9. Administrative/institutional changes | | | |
| centralization/decentralization | | | |
| reorganization and new responsibilities | | | |
| 10. Strategic objectives | | | |
| 11. Action areas | | | |
| 12. NFP guidelines: subprogrammes | | | |
| key projects | | | |

have distinctive features and be easily distinguishable from the others; it is helpful to give them descriptive names. Their merits are assessed by the improvements that they are expected to generate for the community, compared with the level of benefits derived from leaving the sector in its existing state. Some of the outputs, which are measurable, can be shown as quantities or values. In other parts of the table, only descriptions or brief assessments of the relative advantages and

disadvantages of the various scenarios can be included. Taken as a whole, the table summarizes the essential features of the scenarios as a basis for consultation and choice.

Special significance is attached to the match between supply and requirements for each type of output. A scenario which fails to provide what consumers and society want, both now and in future, represents a less-than-ideal option. The table should indicate the future output flows and size of deficits/excesses (quantified as far as possible), based on gap analysis and assuming constant prices. In the event, various ways of closing the gaps are possible. Imbalances between supply and demand for marketable outputs, if not met by imports, will lead to adjustments in their prices. Some deficits can be avoided by importing, but other shortfalls of services, such as soil and water conservation, cannot be circumvented by relying on foreign trade. Generally, unsatisfied requirements of public goods, will remain unfulfilled unless the government or some other not-for-profit organization intervenes to increase their availability and meet the costs. The table should help to identify where remedial action is necessary.

Another basis on which to judge the relative advantages and disadvantages of scenarios is by their cost effectiveness. Each scenario is associated with a set of benefits and costs, the nature and scale of which should be indicated in the table; detailed costings are premature at this stage, but their order of magnitude is relevant to choice of strategy. In some cases, it may be possible to support this assessment by partial cost-benefit analysis, which reveals the returns expected from some of the investments associated with the scenarios. For example, in Cyprus, the annual net cost of managing the State forests was estimated at 58 Cyprus pounds per ha, while the social benefits obtained from water from boreholes and springs, recreational visits by tourists and residents, and soil conservation amounted to 303 Cyprus pounds per ha; this compared with only about 4 pounds per ha annually from timber sales⁹. The big differential between these returns influenced the selection of a rural betterment strategy, which combined forest protection with recreation.

The SWOT analysis already undertaken reveals the sector's ability to cope with external and internal eventualities. This can be extended in the table to show the resilience and vulnerability of the other scenarios by comparing the particular strengths, weaknesses, opportunities and threats associated with each possible course of action. The table also points up the features which support and justify each scenario, and the level of risk that it might fail to deliver the scale of benefits expected from its adoption.

Other cells in the table assess the extent to which the scenarios comply with the imperatives and indicate the major institutional changes that would need to take place. The table should also identify the objectives and main types of action associated with each scenario.

Consultation & feedback based on the scenarios is an important part of the decision process. The criticisms expressed are likely to lead to modification to

improve the scenarios. Revised versions can be presented for re-consideration by the participants, if necessary several times, until a preferred option emerges.

Strategy Formulation

The repetitive consultation procedure continues until a strategy is selected that is considered to be the best possible under the circumstances. It is likely to represent a compromise between the scale of expected advantages and the risk that they might not be achieved. The public value criterion, as discussed in Chap. 8, should determine the strategy that is chosen. Its final approval and authorization is a matter for the government.

The basis on which strategy is selected is a value judgement because it is impossible to calculate precisely the net benefits expected from each option. There are too many outputs, many of which are not measurable, and too many factors to take into consideration. Whichever option is selected should meet the tests set by the imperatives and should balance supply with demand. The table assembles all these factors to facilitate comparison of the options, but the final decision is influenced by personal opinions, imagination and confidence that the desired outcome can be achieved. By definition, a grand design is based on vision as much as calculation and those guiding the path of sectoral development must have faith that, with effort and determination, its goals can be reached.

Choice of strategy leads to definition of more precise strategic objectives. In Cyprus for example, the Rural Betterment Strategy aimed at “safeguarding forest resources for the benefit of the whole community while capturing the advantages of development based on tourism”. This general strategy called for:-

- better conservation of natural resources,
- better facilities for visitors,
- better forest villages,
- better rural environment.

These objectives enabled five *action areas* to be distinguished: (i) the State forests, (ii) the wider countryside, (iii) national parks, nature reserves and protected areas, (iv) local development plans, and (v) provision of information and publicity. These represented the target areas on which activities in the NFP were to be concentrated. They included both areas distinguished by geography and areas of interest connected with particular functions.

In some countries, particularly federal states or countries with marked regional differences, a single general strategy may be incapable of accommodating all the diverse interests that are present. Separate sub-strategies may then be needed for different parts of the country under the umbrella of an enveloping federal strategy. Where there are significant variations in forest resources and the way they are used or administered, one national strategy may lack the flexibility to cope; different approaches may be required to deal with the problems in particular zones. These regional differences should be identified at the sector review stage, so that the

development aims that are subsequently formulated suit the special needs of each particular area.

NFP Preparation

Definition of strategic objectives is followed by preparation of the NFP. This stage marks the start of the programme cycle, lasting 5–10 years, which covers the successive steps of building, developing and reviewing the plan of action designed to implement the strategy. The NFP links the aims phase with the action phase of the strategy process.

The first step in NFP preparation is to identify subprogrammes. Each subprogramme covers a group of related activities or set of associated interventions in the system. These may cut across the action areas identified during strategy formulation, so that projects included in one subprogramme may cover more than one action area. A matrix can be constructed to show how the subprogrammes interact with the action areas, as was done for Cyprus in Table 9.3. By this means the components of the programme are related to the strategic objectives which they are intended to achieve. The matrix also indicates the importance or priority to be attached to each set of interactions.

Each subprogramme consists of projects, which can be listed in separate tables as shown in the example in Table 9.4. Each project is identified by its distinctive contribution to the subprogramme of which it forms part. Projects are essential components of subprogrammes and necessary parts of the NFP as a whole. They are often interdependent and mutually reinforcing. They contribute jointly to the strategy and sector development depends on all of them. Each has a specific role to play in bringing about the capacity changes and expanding the range of outputs that the strategy is expected to provide.

Projects may be classified according to the type of activity required, such as investment or research, and the action area in which they are expected to make an impact. A brief outline should be included for each project, showing its purpose, approximate cost, likely duration and the principal organizations involved. At the NFP preparation stage, the emphasis is on project identification rather than detailed description; each project should undergo searching scrutiny and thorough assessment later on as the programme develops. However, NFP preparation does not take place in a vacuum. Projects that are ongoing at the time are included as well as new project proposals for which additional resources will need to be sought during the duration of the programme. A NFP is based on the existing situation and information available when it is prepared; at the same time, it is necessary to recognise that circumstances will change as the programme progresses. It should be regarded as a flexible document, capable of being added to and elaborated throughout its expected life.

The decisions about future development of the forest sector, which are taken at the highest or strategic level (see Fig. 7.9), refer to the choice of a particular strategy and its interpretation through the NFP. The strategy describes the broad picture that

Table 9.3 National Forest Programme matrix for Cyprus

| Action areas | Subprogrammes | | | | | | |
|--|------------------------------------|--|--|---|-----------|---|---|
| | Afforestation and silviculture (A) | Production of timber and non-wood products (B) | Protection against fires and other hazards (C) | Conservation of ecosystems, flora, fauna and heritage (D) | Water (E) | Local plans and village development (F) | Institutional reform, modernization and capacity building (G) |
| I State forests and surrounding areas | XXX | XX | XXX | XXX | XXX | XXX | XXX |
| II Wider countryside | XXX | X | XXX | XX | X | X | X |
| III Special sites | - | - | XX | XXX | - | XX | XX |
| IV Ecotourism promotion | X | - | X | XXX | - | XXX | XXX |
| V Information, publicity and education | X | - | XXX | XXX | - | X | X |

Note: Crosses indicate the importance of types of activity in relation to action areas, i.e. xxx: high, xx: medium, x: low.
Source: *Final draft National Forest Programme*. Forestry Department, Nicosia, October 1999.

Table 9.4 NFP for Cyprus: Projects in Subprogramme G. Institutional reform, modernization and capacity building

| Activities and Projects | Type | Details | Action areas | Organizations involved | Total cost (CY £000) | Duration |
|---|----------------|---|-------------------|--------------------------|----------------------|-----------|
| 1. Harmonization of law, regulations and procedures | Administrative | Revision of forest legislation to accord with Acquis Communautaire and harmonization with laws relating to environment, town & country planning, game, shooting, fires etc. | I, III, IV | FD, ES, MI, TPHD, GF, DO | 50 | 1 year |
| 2. Forestry Department reorganization and capacity building | Administrative | Review of organizational changes necessary to implement the new strategy. | I, II, III, IV, V | FD | — | 1-2 years |
| 3. New technology | Investment | Training and retraining of staff. | | FD | 500 | |
| | | Project preparation and planning unit. | | FD | 250 | |
| | | Improvement and upgrading of communication system and information technology | I, II, III, IV, V | FD | 250 | 10 years |
| 4. Forestry education | Administrative | New curriculum and courses to provide a wider range of training at the Forestry College | V | FD | 4,000 | 10 years |
| 5. Forestry extension | Investment | Buildings and facilities | | | 1,000 | |
| | Administrative | Technical assistance and incentives for private owners | II | FD, AD, LA, PO | 100 | 10 years |

Source: *Final draft National Forest Programme*. Forestry Department, Nicosia, October 1999.

the programme aims to achieve; this is amplified by means of the strategic objectives and elaborated through the action areas. The subsequent development of the subprogrammes and projects, which comprise the NFP, represent the tactical level in the decision making hierarchy. The NFP provides no more than a framework for future development, made up of subprogrammes and projects which are described in outline. It is not a detailed plan supported by schedules and budgets. Elaboration of the programme, within the bounds set by the NFP, comes later as the result of tactical decisions. Operational decisions take place on a day-to-day basis and relate to project implementation.

NFP preparation forms the first stage in the programme cycle. The duration of this cycle is determined by the length of time between successive NFPs. It covers subprogramme definition and project identification, which are included within the 'aims' phase of the 3A cycle, and the more detailed work of appraising and carrying out projects, which is part of the 'action' phase. Monitoring and evaluation of the progress made by individual projects and the programme as a whole also form part of the programme cycle.

Forest Policy

Preparation and approval of an authoritative declaration of forest policy is a necessary adjunct to strategy formulation and the NFP. A forest policy statement makes clear to all concerned with forest sector affairs and the general public the intentions of the government, as explained in Section 8.4 of the previous chapter. It confers legitimacy on the strategy while exposing it to general scrutiny. The document puts on record, for all to see, a concise statement of the objectives to be pursued and an outline of the programme by which it is expected that they will be achieved. Its preparation is therefore a public relations exercise, requiring care with both the form of the statement and the manner of its presentation.

The strategy formulation and consultation process is intended to identify the best possible course of action for the sector and to obtain widespread support for it. Preparation of a forest policy statement carries the process forward by securing commitment to the strategy at national level. Its approval in the higher echelons of government, ratification by the legislature and support within the civil service are necessary to give weight to the statement. The administrative procedures by which this is achieved depend on the system of government and vary from country to country, but it is important that formal adoption of the strategy and NFP is widely publicised.

The designated lead agency is responsible for the task of preparing and securing approval for the policy statement. This function is closely associated with the administrative procedure by which strategic options are examined and one particular course of action is chosen. It is linked to the wider decision making process, involving the political hierarchy, which is used to settle matters of public policy. It also involves the government ministry or agency responsible for resource allocation and investment planning at national level, from whom advance commitments must

be sought for the resources required for NFP implementation. The sectoral objectives of the strategy should correspond with national aims. In countries which produce national development plans at regular intervals, it is necessary to coordinate and synchronize NFP preparation with the national planning cycle. Forest policy statements need to be integrated with policies in other sectors and contribute to public policy for the nation as a whole. They should reveal the contribution to national development that is expected from the forest sector and help to pin down the corresponding national responsibility to provide adequate resources for this purpose, in so far as they can be foreseen and the prevailing circumstances allow. The lead agency's role includes steering the strategy and NFP through the machinery of government; preparation of a formal statement of forest policy marks the end of this process and encapsulates its results as a binding public declaration to which the government, sectoral interests and the public are expected to conform.

Forest policy declarations need to be clear and concise. They should contain a brief exposition of the strategy and an outline of the NFP. No standardized format exists and it is unlikely — probably undesirable — to attempt to devise one layout to suit all countries. However, it is possible to suggest some headings, covering the aspects which ought to be included to make the statement comprehensible and complete. The following sections are proposed:-

- **Preamble** to explain the scope and purpose of the forest policy statement. It should describe the historical context and outline the procedure that was followed, including sector review, formulation of the new strategy and the NFP designed to implement it.
- **Strategic aims** to define the strategy and set out its aims.
- **Imperatives** to clearly identify the overriding general conditions (holistic approach, sustainability, equity, participation etc.), which apply to the strategy and NFP.
- **Action areas** to indicate the particular areas (either geographical or subject) on which action to achieve the strategic aims will be concentrated.
- **Implementation** to explain how it is intended to achieve the strategic aims by means of the NFP. An outline of the programme should be given, including the main activities that are envisaged and the principal agencies who will carry them out; necessary changes in the sector's organizations, structure and institutions should be indicated.
- **Subprogrammes** to describe the NFP's main components and their specific objectives. The NFP and its subprogrammes provide a framework for subsequent elaboration and project development as implementation proceeds.
- **Resources** to identify the main resource providers and any major reallocation of existing resources that is required. The timing of individual projects and priorities depend on the availability of financial resources from domestic and foreign sources; the programme is flexible within the limits set by the NFP framework.
- **Monitoring and evaluation** to indicate how it is intended to record and measure progress, and to evaluate results. The statement should say who will be responsible for doing this and the reports necessary to ensure public accountability.

Policy statements in this format, generally not more than 10 pages long, should be adequate to satisfy the needs of the legislature, ministers, private sector interests and the general public. They should be readily available for all to see. The policy can be expected to last until the strategy is revised (maybe about 10 years), after which it will be time to update and reissue the document.

Formal declarations of forest policy need to be supported by additional information and public relations campaigns aimed at particular sections of the population. Their content and form of presentation should be suited to the target audience or group. Publicity for the strategy and NFP can be disseminated through radio, television and the press, and modern information technology can be used to maintain data bases and set up websites accessible to the public. Sections of the community may be drawn into collaborative ventures, which involve their active participation in parts of the programme and also raise general awareness of forest sector issues. Examples of such initiatives, which involve members of the public, range from tree planting ceremonies and Arbor Day celebrations to practical conservation management work done by volunteers organized by NGOs. The strategy also depends on sector organizations and institutions. Many forms of participation in forest sector activities are possible, involving government agencies, companies and interest groups, working alone or with others. Support for the strategy from all sections of the community needs to be mobilized by the lead agency, using any means at its disposal.

9.3 ACTION

The action phase of the 3A cycle consists of three stages: *programme development*, *monitoring* its progress and *evaluation* of results. As the projects which make up the programme are converted from ideas into reality, the strategy unfolds and interventions occur, which affect the forest sector's resources, activities, outputs and organizational infrastructure. These changes can be recorded and measured, both at project level and in relation to the programme as a whole. The success (or failures) achieved by each project and the extent to which the strategy achieves its aims need to be evaluated. From the results it is possible to learn the lessons of experience and improve sectoral performance; progress is made by a series of adjustments in response to unexpected events and the continually altering situation in the sector. Forest sector development is a dynamic process based on responses to new knowledge in a constantly changing environment.

Programme Development

The NFP and its subprogrammes form a plan of action aimed at sectoral development. The plan describes, in general terms, the action to be taken to achieve the objectives of the strategy, whether this is visualized as a grand design, a path for sectoral development or a guide to decision making. However, it lacks the detail necessary to make it fully operational. The NFP provides a broad outline of the

interventions in the system that are required, while leaving until later the tactical follow up that is needed to put the plan into practice. Each component of the plan has to be made to work. This procedural approach ensures that the programme can be easily adapted to unforeseen events and new knowledge, while maintaining continuity of purpose; it also provides flexibility in relation to the availability of resources for sector development.

Projects of various kinds are the components which make up the NFP. Some involve investment in sectoral infrastructure or raising future productivity levels, while others are concerned with institutional changes or supporting ongoing operations, such as fire protection, on which the sector depends. Each project consists of a set of related activities intended to achieve a particular purpose. The NFP identifies the projects which it is intended to carry out, with brief summaries of their main features, aims and significance; it is a collection of project proposals, each requiring further investigation and in-depth examination of its implications. Occasionally, additional projects may be identified during programme development.

The detail for programme development is provided by elaborating the project proposals. For each project there is a project cycle, which consists of steps leading from project identification to its implementation, assessment and (if it is to continue) its revision, before the start of a new cycle. Baum's original project cycle, proposed for lending institutions such as the World Bank, contained six steps, as described in Chap. 7 (Fig. 7.7). They follow an orderly progression and the cycle allows for learning and improvement. This sequence of steps can be adapted to fit the NFP situation. After identification and inclusion as part of a subprogramme in the NFP, the project proposal needs to be worked up, fully costed and then carried out. The steps in this process are as follows:-

1. project preparation and design,
2. participation and consultation,
3. appraisal and choice,
4. approval and financing,
5. implementation and operations,
6. recording and measuring progress,
7. project evaluation.

Supervision and control of programme development is the responsibility of the lead agency. The work of preparing projects and steering them through the project cycle, which is vital to the success of the NFP, requires special expertise and undivided attention. It is usually best done by a small *project planning unit*, dedicated to the task, set up under the auspices of the lead agency and supporting all organizations within the sector. This unit needs freedom from bureaucratic interference and may be associated conveniently with a data collection and processing service, which meets technical and general needs for forest sector information.

Project preparation and design consists of turning the proposal from an imaginative idea into an operational scheme. The project's aims should be clearly set out, its proposed activities described and its outputs defined. This involves preparing estimates of the expected costs and benefits, budgets and cash flow statements under

Table 9.5 Basic Logframe matrix

| Summary of objectives/activities | Objectively verifiable indicators | Means of verification | Important assumptions |
|----------------------------------|---|-----------------------|---|
| Overall goal | Measures of goal achievement | | Assumptions for achieving goal |
| Project purpose | Indicators that purpose has been achieved | | Assumptions for achieving purpose |
| Results/outputs | Indicators/measures of outputs | | Assumptions for achieving outputs |
| Activities/inputs | Specification of quantities and costs | | Assumptions about activities and inputs |

a range of assumptions. Project activities need to be scheduled. Alternative ways of achieving the aims or design options should also be explored to see which is likely to produce the best results for the least cost. Risk assessment and the assumptions upon which project success depends also form part of the preparatory procedure.

A technique that is now widely used to assist project preparation and for assessing project proposals is known as the Project Logical Framework or Logframe matrix. This was first adopted by USAID in the early 1970s and has subsequently been modified and applied by other bilateral aid agencies, including the British, Canadian and German; it has also been taken up by international organizations such as the European Community¹⁰. The typical matrix consists of four rows x four columns, as shown in Table 9.5. The vertical axis relates to the levels of planning and the horizontal axis to the objectives, their verification and assumptions, at each level. Logframes provide convenient project summaries and reveal whether projects have been fully thought through; they test projects for their internal consistency and whether they are likely to deliver the benefits that are claimed. The technique is still being developed and improved. Integrated computer software is now available that links the Logframe approach to other aspects of project planning, including Gantt charts and budgeting procedures.

Project design alternatives need to be carefully assessed. It is important to consider other possible ways of achieving the desired ends, perhaps by using different technology, equipment, human resources or management methods. The cheapest alternative is not necessarily the best as the risks associated with each option also need to be considered. Safety and the degree of certainty about the outcome are significant factors in projects aimed at improving environmental quality, such as protecting endangered species or vital water supplies. The assessment should consider the impacts of alternative designs on the sector system as a whole. Project appraisal techniques, such as cost-benefit analysis, do not always look beyond the immediate measurable outputs and it is preferable, if a suitable model is available, to investigate the wider effects of the alternatives. For example, various methods of expanding the output of timber are likely to affect ecosystems, biodiversity

and scenery differently and also affect the subsectors concerned with harvesting, processing and trade in different ways.

Participation and consultation take place in parallel with project preparation. The organization or groups responsible for carrying out the project need to be involved closely with its design; persons whose interests are affected by the project should have an opportunity to influence what is going to happen and the extent of their participation in it. Just as there is a feedback loop in relation to scenarios at programme level, project options need to be formulated and explained to all those concerned so that they can contribute meaningfully before final decisions are made. Project consultation and feedback is an iterative process which may have to be repeated several times before a satisfactory scheme emerges.

Appraisal and choice apply to project alternatives at the design stage and to the project as a whole. It is necessary to discover a project's optimum design and also decide whether the project in that form is an effective and efficient way of using scarce resources. Sometimes it is also necessary to choose between competing projects when total resources are inadequate to undertake the whole programme. Two types of question are relevant: which design or project is the best, compared with others, and whether the design/project is intrinsically worthwhile? Comparisons are made by ranking the options in order of preference and selecting the one considered most desirable. The intrinsic worth of a project depends on its benefits exceeding its costs, difficult though it may be to define these satisfactorily. Judgements of relative merit are required and careful weighing up of advantages and disadvantages, some of which are impossible to quantify. Making choices cannot be avoided, even though they depend on value judgements. Appraisals are based on assessments of costs and benefits, which may not be directly comparable with each other, and not comprehensive or fully worked out. Decision making for programme development in the forest sector is not an exact science.

Cost-benefit analysis is commonly used as an aid to decision making (See Box 9.2). It is undoubtedly useful for estimating those costs and benefits which can be measured, but the value of the technique is limited by its inability to cope satisfactorily with inputs and outputs which have no prices or are intangible. For example, some projects depend on voluntary assistance and the goodwill of the community, or produce conservation benefits based on existence values which accrue to future generations. In its simplest form, as used by commercial undertakings, it consists of a financial appraisal. Estimates are made of costs and returns at their market prices and the difference between them represents profit to the enterprise. Profits are used to compare options, as indicators of their relative desirability, and any project which is unprofitable is unacceptable. The yardstick is a project's net worth. The worth of public projects, when prices are often distorted, cannot be measured so easily. For these, economic and social appraisals are used.

There are technical difficulties with cost-benefit analysis, even at its simplest. First, the costs and receipts occur at different times and investment costs incurred at the start of a project are not directly comparable with the subsequent flow of annual sales returns. It is conventional to adjust cash flows for timing differences by

Box 9.2 Cost-benefit analysis

“Cost-benefit analysis has been defined as an economic appraisal of the costs and benefits of alternative courses of action, whether these costs and benefits are marketed or not, to whomsoever they accrue, both in present and future time, the costs and benefits being measured as far as possible in a common unit of value. Far from being a modern technique, cost-benefit analysis originated in the nineteenth century, as deficiencies of profit-maximization were pinpointed. The literature of the subject is largely concerned with correcting these deficiencies.

Cost-benefit analysis (CBA) is ambitious and all-embracing, attempting to aggregate costs and benefits of many kinds, to all people, in every generation. Its key distinguishing feature is its attempt to translate all costs and benefits (or all objectives) into a common (commensurable) unit of (cardinal) value. It is in this translation, while maintaining truthful and equitable representation of value, that technical problems arise. Given the definition, it would be unreasonable to oppose CBA in theory: the problem is, in practice can it be done.”

Source: Colin Price. *The Theory and Application of Forest Economics*. Blackwell: Oxford (1989).

discounting them to obtain their net present value (NPV); NPVs are then compared to find the most profitable option. However, the discount rate used affects the outcome; low rates tend to assist projects with distant time horizons, such as timber growing, whereas high rates favour rapid paybacks and a short-term outlook. The rate that is chosen has important consequences in relation to inter-generational equity. Choice of the appropriate time preference rate in different circumstances, particularly for public projects, is a complex question about which there is dispute; it has even been argued that discounting has no justification¹¹.

Cost-benefit analysis is mainly used to appraise projects from the point of view of society rather than an enterprise, in situations where private profit is not an appropriate measure of their net worth. For this, the cash flow at market prices needs to be adjusted. The first step consists of removing taxes and subsidies to obtain an economic instead of a financial appraisal; after that, where prices are distorted because of imperfect competition or outputs are not tradeable, imputed or ‘shadow’ prices are substituted, representing the opportunity costs of the factors of production and the value of the outputs to the nation. The unit of value or ‘numeraire’ used for these calculations¹² is the present value of consumption measured at either local or international (border) prices. It is possible to carry the analysis even further, into the social realm, by weighting costs and benefits according to their distributional impacts on different sections of the community. On equitable grounds, projects which favour the poorer sections of society can then be given priority over those which mainly help the rich.

Cost-benefit analysis is now used widely in both advanced and developing countries. A very large body of literature has grown up, dealing with its technical aspects, which goes far beyond the scope of this study. FAO have produced a series of manuals which describe its application to forestry¹³. They cover the assessment of project impacts of all kinds. The technique is undoubtedly useful for appraising projects in the forest sector, but needs to be used with care and understanding of its limitations. It provides guidance for decision makers but cannot supply definitive answers to suit all situations. Valuation problems are usually the main cause of concern.

The shortcomings of cost-benefit analysis are most apparent in relation to outputs which cannot be measured or valued except by making heroic assumptions. What is the value to the community of preserving an endangered species that survives in a particular forest ecosystem, for example? Some species, such as tigers, can be valued indirectly through the expenditure of tourists wishing to see them; the benefits from tourism may be considerable. But what of an insignificant plant at the bottom of the food chain on which an ecosystem depends, which attracts no visitors, even though it may be equally at risk? The value of the whole ecosystem, its species and the genetic material that it supports, are all at stake if the plant is threatened; if the tiger is exterminated the ecosystem of which it forms part is likely to continue to exist. Is a single species worth more than an entire ecosystem? Both tiger and plant have existence values, but how should they be assessed? Different aspects of biodiversity are involved in each case. Attempts have been made to value biodiversity in some tropical forests, but the methodology used was complex, the results vary widely and they are unlikely to be transferable to other places¹⁴. They do not provide a secure foundation for making project choices for NFPs generally. It is necessary to look for a simpler approach.

Of the mixture of outputs that come from forests, some are saleable and can be valued directly, while others challenge the credibility of the cost-benefit approach if they are measurable at all. When, as is often the case, a project affects the flow of several types of output, they all need to be valued on the same basis before being added together to obtain the total net value of the project. The confidence placed on these valuations will depend on the reliability of the various output estimates of which they are composed; the weakest estimate may govern the choice of option and discredit the whole exercise. This is a serious objection where environmental benefits such as biodiversity form a large proportion of the total. Cost-benefit analysis may be appropriate for projects which have a low impact on the environment (e.g. building a new sawmill) but are much less easily applied to most forest management decisions.

Cost-effectiveness analysis is a simplified variant of cost benefit analysis. It may be used when either all options produce the same set of outputs or outputs are ignored because they cannot be valued. In these circumstances the outputs have no effect on choice and costs alone determine which should be selected. Least-cost solutions are suitable for design options which produce similar outputs, but not for deciding whether a project uses resources efficiently. The method may also be useful

where outputs are considered essential or obligatory. The projects which produce them are then unavoidable but it is still desirable to spend as little as possible to obtain their benefits. Some environmental protection projects fall into this category. The natural environment represents more than the user benefits derived from it; it is something that has primary value in itself, which is held in trusteeship for future generations. It has been suggested that some environmental outputs should be treated as a 'merit' goods. A merit good is defined as having intrinsic worth and being necessary whether we want it or not¹⁵. It is a social or public product that is paid for out of general taxation, not by individual purchasers, and there is no direct link between the cost of provision and consumers. Cost-effectiveness analysis is applicable to merit goods.

The systems approach to the forest sector that underlies strategy formulation suggests that in a NFP every project is there to fulfill an essential role. The programme would lose coherence without all the projects and the strategy would be undermined if any are omitted. Projects which are unnecessary have no place in the NFP. By this argument, taken to its logical conclusion, projects do not need to be justified by carrying out detailed cost-benefit analyses; their merits are based on their contributions to the programme as a whole. As with merit goods, cost-effectiveness analysis is appropriate to justify the best use of resources at the tactical level. Provided the strategy has been well-chosen, project appraisal should be aimed at finding the best way of implementing the strategy rather than being concerned with whether, standing on its own, a project is worthwhile. Attention should be focussed on the contribution that each project makes to the achievement of strategic goals. Compliance with the imperatives also depends on the results of the projects. The primary purpose of undertaking project appraisals in this context is therefore tactical rather than strategic.

In practice, detailed project appraisals are often required by financing agencies, either at home or abroad. Ministries of finance and others responsible for allocating resources wish to assure themselves that the money will not be wasted. Aid agencies like to make their own assessments to satisfy their sponsors and critics that funds will be used to relieve poverty and promote development. It is therefore important for lead agencies and the project planning units they control to emphasize project complementarity; they should show how each project fits into the general plan and the contribution that it is expected to make to sectoral development. The appraisal should also demonstrate that the recommended way of proceeding is both effective and efficient. Each request should be supported by a log frame matrix based on the design option that achieves its objectives at the lowest cost to society. Financial appraisals may be undertaken for investment projects to discover their NPVs at appropriate discount rates, their internal rates of return (IRR) and break-even points. Economic/social appraisals may be required for projects which make large impacts on the national economy or which are of special public interest. Projects that are not suitable for cost-benefit treatment, or depend on value judgements and unmeasurable benefits, need to be presented in a simplified manner designed to assist financial decision makers.

For those projects where cost-benefit analysis is attempted, all the impacts should be clearly identified. Those that cannot be evaluated must not be overlooked. Some types of project produce a few, easily measurable outputs, while others have diverse impacts which defy proper assessment. Partial appraisals, which take account of some outputs but omit others, may still be useful for establishing a 'bottom line' below which the total benefits are not expected to fall, even though the full effect of the project is unknown. Institutional projects, such as those included in Table 9.4, are not well-suited to cost-benefit analysis, although their significance in relation to future development may be very great. Where priorities or comparisons are required, ordinal values, which rank the alternatives in relation to one another, instead of cardinal values, which provide absolute estimates of worth, are sufficient.

It should also be appreciated that all valuations, whatever units they are measured in, are estimates subject to risk and uncertainty. In some cases costs and benefits can be expressed as ranges with various probabilities attached to their values. If a model is used to estimate inputs and outputs, sensitivity analysis is normally employed to provide a range of outcomes within which the result is likely to fall. Uncertainty due to unexpected causes, such as storms, floods, market failures or social turmoil, may be simulated in computer models to discover their effects on the system. In all cases value judgements are unavoidable. Project appraisals are subject to errors and it is highly unlikely that the actual results achieved will match the projections made in advance. The choice of project options depends on the level of risk that is considered acceptable in each case and decisions are influenced by the type of project.

Approval and financing of projects normally takes place outside the sector. Government endorsement of the strategy and NFP is unlikely to be accompanied by automatic authorization of projects. The lead agency submits proposals, in their final form after appraisal, seeking approval by external authority for projects that depend on government finance. To some extent, a lead agency may be able to act directly and implement projects on its own initiative if existing budgets are adequate and allow sufficient flexibility to provide the resources required, but extra resources are likely to need special approval from whoever provides them. Projects to be financed by the private sector depend on companies and banks. For government projects and forests owned by the nation, the ministry of finance is usually the arbiter. Projects likely to attract aid are usually submitted by the government to foreign donors. Budgeting and authorisation procedures vary from country to country and depend on the administrative arrangements that are in force.

Implementation and operations follow after a project has been approved and the necessary resources are in place to carry it out. Day to day project management takes over to decide the operational details for each scheme as outlined in the project logframe. Implementation is subject to the imperatives and other constraints set by the strategy and the limitations contained in the project specifications.

Monitoring

This stage of the action phase involves recording and measuring progress. Monitoring forms part of both the project and the programme cycles, enabling managers to keep track of each project and direct the implementation of the NFP as a whole. It is necessary to have an adequate data base and to make arrangements for measuring and recording the changes taking place. The system should provide information, as required, for project managers to direct operations at their level and meet their responsibilities. It should also provide periodic reports to enable the lead agency to supervise the programme as a whole. A satisfactory information system is a necessity for institutional accountability. The public, the government, forest sector organizations and international agencies all depend on reliable information and periodic reports to understand what is going on. Transparency is the best antidote to maladministration and mismanagement.

Information technology has an important part to play. It is desirable to create a data base covering information requirements at several levels that meets the needs of different users. It is necessary to have access to information relating to development of the forest sector, the strategy and the projects in a form suitable for monitoring progress and subsequent evaluation of the results achieved. How and where the information is stored is of less importance than the ability to exchange data between different parts of the system; compatibility of computers and software is necessary if facilities are dispersed. A suitable structure for the information system is shown diagrammatically in Fig. 9.1. It caters for the needs of strategy formulation and NFP preparation as well as programme and project monitoring, evaluation and reporting.

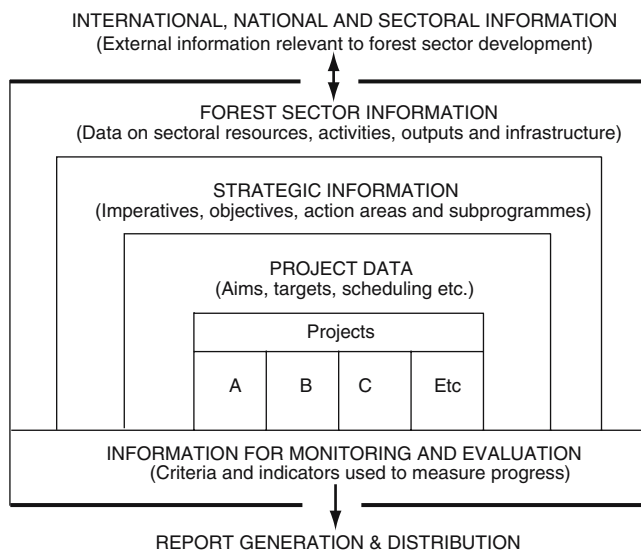


Figure 9.1 Data base structure

Criteria, indicators and targets set the standards and bench marks against which progress is measured. Important criteria relate to compliance with the imperatives in the strategy. Project logframes include targets against which progress can be measured and project schedules specify the time frame within which the results should be achieved. These need to be built in to the information system, so that attention is focussed on the most significant events from the point of view of supervision and managerial control. It should allow the lead agency to see the stage reached by each project at any time. Ideally, the information system should serve as an early warning system. Reporting arrangements can be built into the system, which direct the right information to the right people at the right time.

The information system should be the responsibility of the lead agency. Setting up and maintaining a suitable system is an appropriate function for the project planning unit to undertake. It should be a collaborative exercise. The system is likely to make use of existing data facilities within the sector, enabling different agencies to cooperate in the provision of the necessary information. Much of the information already held in data bases, although important for management purposes, is unlikely to be in the form required for supervision and progress chasing. The particular items of data required for monitoring need to be extracted, processed and compiled. The output from the information system required for periodic reporting should be summarized and presented in a manner that facilitates comparisons between the objectives of the strategy and projects, and the results that are actually achieved.

Evaluation

The final stage in the strategy process consists of reviewing what has occurred, assessing the success of the strategy in meeting its objectives and examining the progress made by the projects. Evaluation is based on monitoring, although it is a separate exercise with its own remit. Evaluation is described as an *ex post* activity, which looks backwards in time, whereas strategy formulation and programme preparation are forward looking (*ex ante*), based on projections and assumptions about the future. By comparing and contrasting the programme from these opposing standpoints, success can be judged and lessons learned to improve future performance. A similar sequence is used to review the achievements of each project. Generally, evaluation makes an important contribution to the acquired stock of sectoral knowledge.

Evaluation is the last step in the project cycle. Project evaluation and review normally take place when a project is completed, though intermediate assessments may also take place; aid donors frequently insist on mid-term reviews for example. Appraisals of projects which are 'time slices' of long-term, ongoing activities (such as an afforestation programme), are generally timed to fit in with the timetables of financing departments for periodic budgetary appropriations. Similarly, programme evaluation is the last step in the programme cycle and precedes review of the strategy and preparation of a new NFP.

Ideally, the criteria, indicators, targets and other measures of performance should be identified at the time the programme or project is prepared. Subsequently, they are included in the information system to provide the basis for monitoring and subsequent evaluation of results. The restrictions imposed by the imperatives also need to be included to enable their observance to be checked at the same time as the progress in achieving objectives is monitored and evaluated. Project design and effectiveness should also be scrutinized during evaluation, using appropriate standards built into the data system.

It is important that the persons who carry out evaluations should be independent, so that they can give an unbiased assessment of the progress made. It is unreasonable to expect either the administrators in the lead agency responsible for implementing the NFP or the managers controlling projects to sit in judgement on their own performance, although it is natural that they should have an opportunity to express their views on the methods used and the results. Where evaluations are team-efforts, the team leader should come from outside the sector.

Review of the strategy and programme marks the end of the strategy process and the 3A cycle. It leads to the beginning of another round, a revised set of strategic objectives and a new NFP.

SUMMARY

- Strategic methods describe the means which can be used to carry out the strategy process and choose between alternatives at various stages in the sequence.
- The strategy process is cyclical and arranged in three phases: analysis, aims and action. Each phase contains several stages which are interdependent and may overlap.
- The *analytical phase* consists of four stages. First, a thorough review of the forest sector is carried out; this leads to study of the transformations taking place and system modelling where possible; SWOT analysis (strengths, weaknesses, opportunities and threats) follows; in the final stage the arrangements for participation in sectoral affairs are examined.
- Sector review establishes the baseline for comparison of alternative strategies; it provides a description of the present state of the sector and how it is expected to change. It consists of a systematic assessment of the sector's resources, activities, outputs, organizational structure, institutional framework, external interactions, sector capacity and contributions to trade, investment and the national economy.
- Future supply possibilities are matched to the requirements of consumers and society by study of the transformations which take place, gap analysis and modelling. SWOT analysis is used to determine the sector's strategic position and ability to cope with change. Participatory arrangements are examined with the aim of increasing sector organizations' and interest groups' involvement and commitment to future development.

- The *aims phase* covers the identification of imperatives, scenario presentation, strategy formulation, NFP preparation and procedure for dealing with forest policy statements.
- Four global imperatives (holistic approach, sustainability, equity and participation) are proposed, which narrow down the range of strategic options; they need to be clearly stated and interpreted to suit local conditions..
- Scenarios depict imaginary future states of the forest sector, presented for consultation, which serve as a basis for comparing options and choosing a strategy.
- National Forest Programme (NFP) preparation is based on ‘action areas’, which target the activities necessary to achieve the strategic objectives, and ‘subprogrammes’ covering groups of related activities. The subprogrammes consist of outline project proposals.
- A format is proposed for formal declarations of forest policy, which contains the following sections: preamble, strategic aims, imperatives, action areas, implementation, subprogrammes, resources, and monitoring and evaluation.
- The *action phase* deals with programme development, monitoring progress and evaluation of results.
- The NFP provides a framework for subsequent elaboration, by developing detailed project proposals, getting them approved, financed and implemented. The steps follow a project cycle which allows for consultation and participation.
- NFP and project performance need to be recorded and monitored. Evaluation of results when the programme is completed leads to reformulation of the strategy and preparation of a new NFP; projects are reviewed and revised (or terminated) at the end of each project cycle. A suitable information system is essential.

FURTHER READING

Management techniques such as SWOT analysis are described in most of the well-known business strategy textbooks, including Dobson & Starkey (*The Strategic Management Blueprint*. Blackwell: Oxford, 1993) and Johnson & Scholes (*Exploring Corporate Strategy*. Prentice Hall, 1988). Freeman explores stakeholder concepts (*Strategic Management: a Stakeholder Approach*. Pitman, 1984).

For information on Logical Frameworks see Analoui, F. (editor) (1994). *The Realities of Managing Development Projects*. Avebury: Aldershot; several Aid Agencies, including CIDA, Norad and GTZ have produced their own versions in handbooks.

There is a very large quantity of literature on cost-benefit analysis, often highly technical. A major landmark in its evolution was the *Manual of Industrial Project Analysis* published by OECD in two volumes: vol. I *Methodology and Case Studies* (1968) and vol. II *Social Cost Benefit Analysis* (1969) by Little and Mirlees. A forestry manual from the same era was FAO Forestry Paper 17. *Economic Analysis of Forestry Projects*. FAO: Rome (1979). Recent guidelines specially written to meet forestry needs are available in two FAO Forestry Papers, No.106. *Economic Assessment of Forestry Project Impacts*, published in 1992, and No.114.

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